IN THE CLAIMS:

1. *(currently amended)* A method of defining an integrated circuit layout for non-Manhattan, curved-shaped elements using a Manhattan rectangular grid system, the method comprising the steps of:

a) determining ~~the~~ a minimum grid resolution of a specific Manhattan layout and mask making system;

b) defining a minimum spacing between adjacent vertices of a regular polygon as the distance between a pair of selected grid points;

c) superimposing a non-Manhattan, curved-shaped element over the Manhattan grid system;

d) fitting a plurality of regular polygons within the defined space of the non-Manhattan, curved-shaped element by locating at least one vertex of each regular polygon on the periphery of the non-Manhattan, curved-shaped element.

2. *(original)* The method as defined in claim 1 wherein in performing step b), the selected pair of grid points are adjacent grid points.

3. *(currently amended)* The method as defined in claim 1 wherein the non-Manhattan, curved-shaped element is a curved line and a plurality of inscribed rectangles are used to define the curve.

4. *(currently amended)* The method as defined in claim 1 wherein the non-Manhattan, curved-shaped element is a curved line and a plurality of circumscribed rectangles are used to define the curve.

5. *(currently amended)* The method as defined in claim 1 wherein the non-Manhattan, curved-shaped element is an optical element.

6. *(currently amended)* The method as defined in claim 5 wherein Manhattan, rectangular-shaped electrical elements are included on the same grid as the non-

Manhattan, curved-shaped optical elements, allowing for both optical and electrical elements to be laid out simultaneously on the same grid.

7. *(currently amended)* The method as defined in claim 1 wherein in performing step b), a rectangle is used as the regular polygon and the step includes defining minimum rectangle width as the distance between the pair of selected grid points.

8. *(currently amended)* The method as defined in claim 1 wherein the geometry of the non-Manhattan, curved-shaped element is determined by using as an input an equation of a predetermined geometrical shape.

9. *(currently amended)* The method as defined in claim 1 wherein in performing step d), a plurality of vertices of at least one regular polygon are located on the periphery of the non-Manhattan, curved-shaped element.

10. *(original)* The method as defined in claim 1 wherein in performing step c), diffractive optical element is superimposed over the Manhattan grid system.

11. *(currently amended)* A method for generating an integrated circuit layout of at least one non-Manhattan, curved-shaped optical element and at least one Manhattan, rectangular-shaped electronic element, the method comprising the steps of:

simulating a set of predetermined optical functions to generate a physical layout of at least one non-Manhattan, curved-shaped optical element;

converting the physical layout of the at least one non-Manhattan, curved-shaped optical element into a layout compatible with a Manhattan grid system, the converting step requiring the steps of:

a) determining ~~the~~ a minimum grid resolution of a specific Manhattan layout and mask making system;

b) defining a minimum spacing between adjacent vertices of a polygon as the distance between a pair of selected grid points;

c) superimposing a non-Manhattan, curved-shaped element over the Manhattan grid system;

d) fitting a plurality of polygons within the defined spaced of the non-Manhattan, curved-shaped element by locating at least one vertex of each polygon on the periphery of the non-Manhattan, curved-shaped element;

simulating a set of predetermined electrical functions to generate a physical layout of at least one Manhattan, rectangular-shaped electronic element;

providing the Manhattan layout of the at least one electronic element and the converted Manhattan layout of the at least one optical element as inputs to a mask making system; and

generating a mask including the layout of both the optical and electronic elements on a Manhattan grid system.

12. *(currently amended)* A system for defining an integrated circuit layout for non-Manhattan, curved-shaped elements using a Manhattan grid system, the system including a processor capable of performing the operations of

a) determining ~~the~~ a minimum grid resolution of a specific Manhattan layout and mask making system;

b) defining a minimum spacing between adjacent vertices of a polygon as the distance between a pair of selected grid points;

c) superimposing a non-Manhattan, curved-shaped element over the Manhattan grid system;

d) fitting a plurality of polygons within the defined space of the non-Manhattan, curved-spaced element by locating at least one vertex of each polygon on the periphery of the non-Manhattan, curved-shaped element.

13. *(original)* The system as defined in claim 12 wherein the system further comprises an electronic IC layout tool for providing a layout of Manhattan elements, the output of the electronic IC layout tool provided as an input to the system processor for developing a single mask including both optical and electronic components.

14. *(currently amended)* A mask layout software tool comprising:

an optical simulator for developing a physical layout of at least one optical component having a non-Manhattan, curved-shaped geometry;

a layout conversion module for converting the physical layout of the at least one optical component having a non-Manhattan, curved-shaped geometry into a layout for use with a Manhattan grid system, the layout conversion module comprising a processor capable of performing the operations of:

a) determining ~~the~~ a minimum grid resolution of a specific Manhattan layout and mask making system;

b) defining a minimum spacing between adjacent vertices of a polygon as the distance between a pair of selected grid points;

c) superimposing a non-Manhattan, curved-shaped element over the Manhattan grid system;

d) fitting a plurality of polygons within the defined space of the non-Manhattan, curved-shaped element by locating at least one vertex of each polygon on the periphery of the non-Manhattan, curved-shaped element;

an electronic simulator for developing a physical layout of at least one electronic component having a Manhattan, rectangular-shaped element; and

a mask layout module, coupled to the electronic simulator and the output of the layout conversion module for generating a layout of both the optical and electrical components.